Notice of Allowability	Application No.	Applicant(s)	
	10/749,432	KAERIYAMA, TOSHIYUKI	
	Examiner	Art Unit	
	Evelyn A. Lester	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.

2. ☒ The allowed claim(s) is/are *1-14*.

3. ☒ The drawings filed on *02 July 2004* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 12-31-03
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EVELYN LESTER
PRIMARY EXAMINER

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance:

The prior art does not show or fairly suggest the claimed invention of a method of operating a digital micromirror device having the claimed method steps and claimed limitations, wherein a rejection under 35 USC 102 or 103 would be improper. Please particularly note the combination of all claimed method steps and all of the claimed limitations, including as recited in claim 1, the method steps of applying a reset voltage pulse to the micromirror, applying an offset voltage to the micromirror immediately after the reset voltage pulse, applying a bias voltage to the micromirror immediately after the offset voltage, wherein the bias voltage is applied for a damping delay period, applying a triangular damping pulse to the micromirror after the damping delay period, whereby the triangular damping pulse reduces a transient resonant vibration of the micromirror on a first landing plate, and reapplying the bias voltage to the micromirror; and as recited in claim 8, the method step of applying a reset voltage pulse to the micromirror, wherein the reset voltage pulse causes the micromirror to launch from a landing plate, applying an offset voltage to the micromirror immediately after the reset voltage pulse, wherein the offset voltage is applied for a damping delay period, wherein the micromirror launches and is moving away from the landing plate before an expiration of the damping delay period, applying a triangular damping pulse to the micromirror immediately after the offset voltage, and reapplying the offset voltage to the micromirror, whereby the triangular damping pulse reduces oscillation of the micromirror about a neutral position.

These method steps make it possible to improve the operating characteristics of the digital micromirror devices by providing a more stable and reliable switching operation, enables shorter mechanical switching time that allows less minimum expose time and increased color bit depth, which may in turn provide a reduction in video noise and contouring. These reasons and others, described in the specification of the claimed invention clearly provide an improved method for damping movable elements in micromirror devices, thereby providing an improved method of operating a micromirror device.

The closest prior art was found to be a U.S. Patent to Nelson, Patent Number 6,583,921 B2, wherein the disclosure teaches that a micromirror can be critically damped to prevent oscillations by tailoring at least one of the voltages applied to the mirror and capture electrodes. However, this reference fails to teach the specifics of the claimed invention. Therefore, the claimed invention is considered to be in condition for allowance as being novel and nonobvious over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 12-31-03 was filed before the mailing date of this office action. The submission is in compliance with the

provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

3. The drawings were received on 7-2-04. These drawings are approved by the Examiner.

EXAMINER'S AMENDMENT

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

On page 1 of the specification, the related application serial numbers were updated to read in paragraph [0002]:

[0002] This application relates to the following co-filed and commonly assigned patent applications: Serial No. ~~[TI-34208]~~ 10/749,497 (now allowed), filed on December 31, 2003, entitled "Damped Control of a Micromechanical Device;" and ~~[Serial No. [TI-34206]]~~ U.S. Patent 6,891,657 B2, filed on December 31, 2003, entitled "Damped Control of a Micromechanical device," which applications are hereby incorporated herein by reference.

These changes were required to place the application in better condition for allowance, and especially for issuance.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following are U.S. Patents directed to methods of operating micromirror devices with various approaches:

Hornbeck et al	U.S. Patent 5,096,279
Fleming	U.S. Patent 5,867,302
Dickensheets et al	U.S. Patent 6,154,305
Kowarz et al	U.S. Patent 6,282,012 B1

As well as the Assignees' related patent, U.S. Patent 6,891,657 B2 (Hewlett et al).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evelyn A. Lester whose telephone number is (571) 272-2332. The examiner can normally be reached on M- F, from about 10 am to 7 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Evelyn A. Lester
Primary Examiner
Art Unit 2873

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July 7, 2005